

REMARKS/ARGUMENTS

Favorable reconsideration of this application in light of the following discussion is respectfully requested.

Claims 1-30 are presently active in this case. The present Amendment amends Claims 1, 3, 4, 8, 10-12, and 14-17 and adds Claims 18-30.

In the outstanding Office Action, Claims 1-17 were rejected under 35 U.S.C. § 102(b) as being anticipated by Lessen (U.S. Patent No. 3,881,669).

In response to the statement in item 4 of the Office Action that limitations of Claims 16 and 17 were not given patentable weight, Claims 16 and 17 were amended to provide language more clearly specifying a structural feature of the apparatus. Applicant respectfully submits that the feature is now clear and should be given patentable weight.

In response to the rejection of Claims 1-17, Applicant respectfully requests reconsideration of the rejection and traverses the rejection as discussed next.

Briefly recapitulating, Applicant's invention, as recited in Claim 1 relates to an apparatus for accelerating a destruction of a vortex formed at a rear of a wing of an aircraft by a merging of first and second co-rotating eddies, including: a perturbation device disposed adjacent an area of creation of the first co-rotating eddy, the perturbation device being configured to generate a periodic perturbation having a wavelength capable of exciting at least one instability mode of the first eddy.

Turning now to the applied prior art, the Lessen patent discloses an apparatus for eliminating or substantially attenuating the vortices which typically trail the airfoils of heavier-than-air aircrafts in flight. However, the Lessen patent fails to teach "the perturbation device being configured to generate a *periodic* perturbation *having a wavelength* capable of exciting at least one instability mode of the first eddy," as recited in independent Claim 1 (a similar feature is also recited in independent Claims 10 and 16).

The Lessen patent explicitly teaches an apparatus wherein “the air stream discharged from nozzle 30 is discharged at a flow rate of such a magnitude that it has a magnitude of momentum flux, relative to the free air stream, which is sufficient to render the trailing vortex with which it combines hydrodynamically unstable.”¹ The Lessen patent further states “[t]he flow rate of air through the nozzle was 0.38 pounds per second.”² Clearly, the Lessen patent simply teaches as perturbation an airflow at a certain prescribed flow rate, which airflow is neither periodic nor characterized in any way by a wavelength, much less by “a wavelength capable of exciting at least one internal instability mode.”

Therefore, the prior art fails to teach or suggest every feature recited in Applicant's independent Claims 1, 10, and 16, so that Claims 1-17 are patentably distinct over the prior art. Accordingly, Applicant respectfully traverses and requests reconsideration of the rejection based on the Lessen patent.³

Further, even if the Lessen patent had disclosed such features, the outstanding Office Action's rejection is based on the position that Figure 2 of the Lessen patent shows “a device inherently capable [of] performing as claimed.”⁴ However, Applicant respectfully submits that this position is insufficient to show that Figure 2 of the Lessen patent inherently teaches the claimed “perturbation device disposed adjacent an area of creation of the first co-rotating eddy, the perturbation device being configured to generate a periodic perturbation having a wavelength capable of exciting at least one instability mode of the first eddy” because it fails

¹ See Lessen, column 5, lines 63-68.

² See Lessen, column 7, lines 28-29.

³ See MPEP 2131: “A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference,” (Citations omitted) (emphasis added). See also MPEP 2143.03: “All words in a claim must be considered in judging the patentability of that claim against the prior art.”

⁴ See the outstanding Office Action at page 2, item 1.

to show “that the allegedly inherent characteristic necessarily flows from the teachings of the applied prior art.”⁵

Further, Applicant notes that the Lessen patent states that “[i]t is these disturbances which, in the state of hydrodynamic instability created by the injection of a fluid stream pursuant to the practice of this invention, grow with respect to time and/or space to dissipate the trailing vortex.”⁶ The Lessen patent further states that “[t]he energy from the combined axial and swirling flow will be transformed to disturbance energy which will cause the directed flow energy to dissipate in turbulence.”⁷ These excerpts further stress the entirely different nature of the instability exploited in the Lessen patent. In particular, the type of hydrodynamical instability therein, “Taylor-Gortler,”⁸ is unrelated to the wavelength dependent internal instability mode of Applicant’s invention. To that effect, particular types of instability were specified in new dependent Claims 18-20, 24, 25, and 27-29.

Further, Applicant notes that the Lessen patent fails to teach emitting fluid jet *transversely* to a direction of travel of the aircraft and imposes extremely strong constraints on its own direction of emission, which happens to be precisely the contrary. Specifically, the Lessen patent states that “the method of the invention consists of injecting a fluid into the core of the trailing vortex consistent with certain *critical* criteria. Thus it is *essential* to the successful practice of the method of this invention (1) that the axis of the injected fluid stream be *colinear* and *coaxial* with the axis of the trailing vortex.”⁹ Therefore, since the

⁵See MPEP 2112 (emphasis in original) (citation omitted). See also same section stating that “[t]he fact that a certain result or characteristic may occur or be present in the prior art is not sufficient to establish the inherency of that result or characteristic,” (emphasis in original). See also In re Robertson, 49 USPQ2d 1949, 1951 (Fed. Cir. 1999) (“[t]o establish inherency, the extrinsic evidence ‘must make clear that the missing descriptive matter is necessarily present in the thing described in the reference, and that it would be so recognized by persons of ordinary skill,’” citing Continental Can Co. v. Monsanto Co., 948 F2d 1264, 1268, 20 USPQ2d 1746, 1749 (Fed. Cir. 1991); and “[i]nherency, however, may not be established by probabilities or possibilities. The mere fact that a certain thing may result from a given set of circumstances is not sufficient,” Id. at 1269 (citation omitted)).

⁶ See Lessen at column 2, lines 18-25. Emphasis added.

⁷ See Lessen at column 4, lines 18-21.

⁸ See Lessen at column 5, lines 42-45.

⁹ See Lessen at column 1, lines 31-36. Emphasis added.

axis of the injected fluid must be colinear and coaxial with that of the trailing vortex, the Lessen patent cannot teach a fluid jet transverse to a direction of travel of the aircraft since the direction of travel of the aircraft, as illustrated in either Figure 1 of the Lessen patent or Figure 1 of Applicant's specification, is colinear with that of the trailing vortex. Therefore, Lessen's own words limit the scope of its method to the opposite of anything "transverse." Accordingly, this "transverse" feature was added in new dependent Claims 23 and 26.

In order to vary the scope of protection recited in the claims, new Claims 18-30 are added. New Claims 18-30 find non-limiting support in the disclosure as originally filed, for example in Applicant's specification at page 5, lines 20-25; page 10, lines 17-25; page 11, lines 1-3; page 13, lines 9-12; in the original claims of allowed parent Application Serial No. 10/080,407. Therefore, the changes to the claims are not believed to raise a question of new matter.¹⁰

Consequently, in view of the present amendment, no further issues are believed to be outstanding in the present application, and the present application is believed to be in condition for formal Allowance. A Notice of Allowance for Claims 1-30 is earnestly solicited.

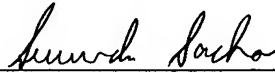
¹⁰ See MPEP 2163.06 stating that "information contained in any one of the specification, claims or drawings of the application as filed may be added to any other part of the application without introducing new matter."

Application No. 10/717,672
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Should the Examiner deem that any further action is necessary to place this application in even better form for allowance, the Examiner is encouraged to contact Applicant's undersigned representative at the below listed telephone number.

Respectfully submitted,

OBLON, SPIVAK, McCLELLAND,
MAIER & NEUSTADT, P.C.



Philippe J.C. Signore, Ph.D.
Attorney of Record
Registration No. 43,922

Customer Number
22850

Tel: (703) 413-3000
Fax: (703) 413 -2220
(OSMMN 06/04)

Surinder Sachar
Registration No. 34,423

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